The a priori procedure (APP) for estimating the Cohen's effect size under skew normal settings

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Abstract

The a priori procedure (APP) provides minimum sample sizes to meet specifications for precision and confidence that, in turn, can enhance trust that the sample statistics to be obtained provide good estimates of corresponding population parameters. A recent advance by Chen et al. (2021) [5] showed how to perform the APP with respect to Cohen's d, which is the most popular effect size measure in the social sciences. However, a limitation is that Chen et al. [5] assumed normal distributions that compose only a subset of the much larger family of skew normal distributions. Therefore, it would be useful to generalize to skew normal distributions. We perform the mathematical derivations for the generalization and support them with simulations and worked examples.